

## Inhalants

Inhalants are breathable chemical vapors that produce psychoactive (mind-altering) effects. A variety of products common in the home and in the workplace contain substances that can be inhaled. Many people do not think of these products, such as spray paints, glues, and cleaning fluids, as drugs because they were never meant to be used to achieve an intoxicating effect. Yet, young children and adolescents can easily obtain them and are among those most likely to abuse these extremely toxic substances.

Inhalants fall into the following categories:

### **Volatile Solvents**

- *Industrial or household solvents or solvent-containing products*, including paint thinners or removers, degreasers, dry-cleaning fluids, gasoline, and glue
- *Art or office supply solvents*, including correction fluids, felt-tip-marker fluid, and electronic contact cleaners

### **Aerosols**

- *Household aerosol propellants* and associated solvents in items such as spray paints, hair or deodorant sprays, fabric protector sprays, aerosol computer cleaning products, and vegetable oil sprays

### **Gases**

- *Gases used in household or commercial products*, including butane lighters and propane tanks, whipping cream aerosols or dispensers (whippets), and refrigerant gases
- *Medical anesthetic gases*, such as ether, chloroform, halothane, and nitrous oxide ("laughing gas")

### **Nitrites**

- *Organic nitrites* are volatiles that include cyclohexyl, butyl, and amyl nitrites, commonly known as "poppers." Amyl nitrite is still used in certain diagnostic medical procedures. Volatile nitrites are often sold in small brown bottles labeled as "video head cleaner," "room odorizer," "leather cleaner," or "liquid aroma."

## **Health Hazards** ———

Although they differ in makeup, nearly all abused inhalants produce short-term effects similar to anesthetics, which act to slow down the body's functions. When inhaled in sufficient concentrations, inhalants can cause intoxication, usually lasting only a few minutes.

However, sometimes users extend this effect for several hours by breathing in inhalants repeatedly. Initially, users may feel slightly stimulated. Repeated inhalations make them feel less inhibited and less in control. If use continues, users can lose consciousness.

Sniffing highly concentrated amounts of the chemicals in solvents or aerosol sprays can directly induce heart failure and death within minutes of a session of repeated inhalations. This syndrome, known as “sudden sniffing death,” can result from a single session of inhalant use by an otherwise healthy young person. Sudden sniffing death is particularly associated with the abuse of butane, propane, and chemicals in aerosols.

High concentrations of inhalants also can cause death from suffocation by displacing oxygen in the lungs and then in the central nervous system so that breathing ceases. Deliberately inhaling from a paper or plastic bag or in a closed area greatly increases the chances of suffocation. Even when using aerosols or volatile products for their legitimate purposes (i.e., painting, cleaning), it is wise to do so in a well-ventilated room or outdoors.

Chronic abuse of solvents can cause severe, long-term damage to the brain, the liver, and the kidneys.

Harmful irreversible effects that may be caused by abuse of specific solvents include:

- Hearing loss—toluene (spray paints, glues, dewaxers) and trichloroethylene (dry-cleaning chemicals, correction fluids)
- Peripheral neuropathies, or limb spasms—hexane (glues, gasoline) and nitrous oxide (whipped cream dispensers, gas cylinders)
- Central nervous system or brain damage—toluene (spray paints, glues, dewaxers)
- Bone marrow damage—benzene (gasoline)

Serious but potentially reversible effects include:

- Liver and kidney damage—toluene-containing substances and chlorinated hydrocarbons (correction fluids, dry-cleaning fluids)
- Blood oxygen depletion—aliphatic nitrites (known on the street as “poppers”, “bold”, and “rush”) and methylene chloride (varnish removers, paint thinners)

## **Extent of Use** ———

Initial use of inhalants often starts early. Some young people may use inhalants as an easily accessible substitute for alcohol. Research suggests that chronic or long-term inhalant abusers are among the most difficult drug abuse patients to treat. Many suffer from cognitive

impairment and other neurological dysfunction and may experience multiple psychological and social problems.

### ***Monitoring the Future (MTF) Survey\****

According to the 2006 MTF survey, lifetime\*\* use of inhalants measured 16.1 percent among 8th-graders, 13.3 percent among 10th grade students, and 11.1 percent among 12th-graders in 2006.

### ***Drug Abuse Warning Network (DAWN)\*\*\****

DAWN estimates 4,312 inhalants-related emergency department visits in 2005. This is a 54-percent decrease from 9,275 visits in 2004.

### ***National Survey on Drug Use and Health (NSDUH)\*\*\*\****

In 2005, there were 877,000 persons aged 12 or older who used inhalants for the first time within the past 12 months; 72.3 percent were under age 18 when

they first used. The average age at first use among recent initiates aged 12 to 49 was 16.1.

Past month use of inhalants increased among Black females aged 12 to 17 between 2004 and 2005, from an estimated 7,000 to 35,000. The percentage of males aged 18 to 25 reporting lifetime use decreased over the same time period, from 17.7 percent to 16.3 percent.

## ***Other Information Sources*** ———

For additional information on inhalants, please refer to the following sources on NIDA's Web site, **www.drugabuse.gov**:

- Inhalant Abuse—*Research Report Series*
- Various issues of *NIDA Notes* (search by "inhalants" or "solvents").

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\* These data are from the 2006 Monitoring the Future Survey, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted annually by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at [www.drugabuse.gov](http://www.drugabuse.gov).

\*\* "Lifetime" refers to use at least once during a respondent's lifetime. "Past year" refers to use at least once during the year preceding an individual's response to the survey. "Past month" refers to use at least once during the 30 days preceding an individual's response to the survey.

\*\*\* These data are from the annual Drug Abuse Warning Network, funded by the Substance Abuse and Mental Health Services Administration, DHHS. The survey provides information about emergency department visits that are induced by or related to the use of an illicit drug or the nonmedical use of a legal drug. The latest data are available at 800-729-6686 or online at [www.samhsa.gov](http://www.samhsa.gov).

\*\*\*\* NSDUH (formerly known as the National Household Survey on Drug Abuse) is an annual survey of Americans age 12 and older conducted by the Substance Abuse and Mental Health Services Administration. Copies of the latest survey are available at [www.samhsa.gov](http://www.samhsa.gov) and from the National Clearinghouse for Alcohol and Drug Information at 800-729-6686.



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